THE VETERINARY RECORD

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The Crusade against Consumption.

The meeting held at Marlborough House on Tuesday under the presidency of H.R.H. The Prince of Wales will give a much needed impetus to the agitation against tuberculosis. Very many eminent men were present, as were representatives of learned and scientific bodies. The chiefs of the Army and Navy Medical Departments, the Presidents of the Royal College of Physicians, Royal College of Surgeons and Royal College of Veterinary Surgeons, the President of the British Medical Association, the Secretary of the Royal Agricultural Society attended, and were supported by the Marquis of Salisbury, the Earl of Rosebery, Mr. Walter Long, and other statesmen. Professor Burdon Sanderson, Sir George Brown, and Professor McFadyean were also there.

The Prince of Wales opened the proceedings by calling upon Sir William Broadbent to make a statement of the objects and methods of the new organisation known as "The National Association for the Prevention of Consumption." The great physician accomplished his task in an admirable manner, giving in a concise and lucid speech the facts showing the necessity for action and the methods to be adopted. The objects are:—

1. To educate the public as to the means of preventing the spread of consumption from those already suffering from the disease.
2. To extinguish tuberculosis in cattle.
3. To promote the erection of sanatoria for the open air treatment of tuberculous disease.

The last object is the one which least concerns us as veterinarians, though we may all wish it well and rejoice that a munificient benefactor should have ensured it success by a gift of £20,000 for the erection and equipment of a sanatorium.

The first object—the education of the public—is one capable of doing infinite good. The association does not advocate any compulsory methods of attacking the disease. In this is wisdom, because authorities who differ as to the value of notification and other methods are able to work together on a purely voluntary platform. If the Association did nothing more than convince the general public that tuberculosis was simply a contagious disease it would achieve a victory infinitely greater than most societies who have been trying to regenerate the world for ages past. What the public requires is information as to how the disease spreads and how healthy persons become infected. It is rather curious to note that Sir William Broadbent follows all medical authorities in dwelling upon the danger of dried sputum and utterly ignoring the possibilities of infection by the fresh moist bacilli which adhere to the lips of patients and are transferred to cups, spoons, and other articles. Patients are warned against the virus of diphtheria but very seldom against that of tuberculosis. How many hundreds of children enter the sick rooms of consumptives and are allowed to taste the jellies, fruits, puddings, etc., which have been in contact with the lips of patients and to use the cups and spoons which are besmeared with virulent saliva? Dried sputum seems to be a medical fetish, and attention might well be given to the infective medium before it becomes dry.

The second object—to extinguish tuberculosis in cattle—appeals directly to veterinarians. Sir William Broadbent advises that all milk should be boiled, until the day arrives when bovine tuberculosis has ceased to exist. He stated that the Society recognised the impossibility of stamping out the disease by immediate slaughter of every diseased animal. No sane person has ever suggested such a course, but this way of putting it seems to be accepted as an answer to those who suggest slaughter of clearly and distinctly dangerous animals. The Society also recognises that "the public has a right to a milk supply which shall be absolutely free from tubercle bacilli." If this is a "right" great wrongs are at present permitted, and we may safely say will continue until much more is done than the Society now proposes. The Society will earnestly advocate "the testing of herds by tuberculin and the isolation of animals found to be affected." The Society is badly advised if it fancies farmers will voluntarily submit to all the cost and trouble of isolating cattle that react. On most farms new buildings would be the first requisite for such action, and the interference with routine methods of feeding are entirely overlooked by those who describe the test as simple and inexpensive. For those who can afford it the use of tuberculin is altogether good, but generations of farmers will pass away before mere voluntary action induces the majority to face the trouble and cost.

"The conspicuous success which has attended the use of tuberculin in Denmark" is becoming widely misunderstood. Professor Bang has achieved a great success in valuable experiments on some farms run by public money. What effect his work has had on the control of bovine tuberculosis in Denmark no one knows. Possibly he has tested 1 per cent. of the cattle population.

The National Association for the Prevention of Consumption is a great Society, and it proposes to do good voluntary work. Something more than voluntary action is, however, necessary, and it is to be hoped that the forces of the Society may not be misdirected into opposing the only really effective measures required to control the disease among animals.

TEMPERATURE CHART OF A HERD OF COWS TESTED WITH TUBERCULIN.

By Harold Sessions, F.R.C.V.S., Brighton.

I was recently asked to test with tuberculin a herd of well kept average shorthorn cows, whose sheds were large and airy, and who, during the summer, were kept in meadows.

The cows up to No. 20 were comparatively aged cows. The rest were chiefly three or four-year-olds bred on the farm. The milk was reduced in quantity about one gallon on the Friday morning, and about four gallons on the Saturday, a very small quantity considering several of the cows showed such a marked rise of temperature, and that one or two scoured and one or two coughed for a day or so afterwards. I injected the cows Thursday evening at 8 p.m. No. 12 I did not inject, her temperature was too high, though she appeared otherwise quite well. This is a herd which has never been previously tested.

		Tuesday	Wednesday	Thursday		Friday			Saturday
		8 p.m.	8 p.m.	8 p.m.	7 a.m.	11 a.m.	3.30 p.m.	8 p.m.	7 a.m.
1.	Roan	101	101·2	102	101·2	101·8	101·8		
2.	Red	100·8	101·6	100·8	102·4	102·2	101·8		
3.	Red	101	101·6	102·4	103·2	104·4	103·2	101·6	
4.	L. Roan	101·2	100·8	101·4	101·4	102	101·4		
5.	Red	101·8	101	101·8	101·2	102·2	103	102·4	
6.	Red and white	102·2	103·2	102·8	102	101·8	102		
7.	Roan	101·2	101·6	101·4	102·6	105	103·4	101·6	
8.	Red	103	103·8	103	104·8	105	104	104	101·4
9.	Roan	101·2	101·2	101·2	102	105	106·4	103·2	101
10.	L. Roan	99·2	99·6	101·4	102	102	102·2	102·4	
11.	Red and white	101·2	101·4	102	101·8	102·4	103·2	102·4	
12.	Roan	104·4	103·2	104·4					
13.	Red	102·6	101	100·2	100·6	101·8	101·4		
14.	Roan	100·4	100·8	101·8	101·8	102·4	103	102·8	
15.	Red	100·4	101·4	102	101·4	101·8	101·6		
16.	L. Roan	101·8	102	102·8	102	102·2	103	103·4	102·8
17.	Red	101·6	101·2	101·2	104·4	104	102·4	104·4	
18.	Red	98·8	101·2	100·8	101	101·4	101·4		
19.	White	102·6	103·2	103·8	105	105·4	103·4	103	101
20.	Red & white	102·6	101·4	101·8	101·8	102·6	106	105·2	102·2
21.	L. Roan	100·4	101·2	101	101	102·4	102·8	102	
22.	Red	99·4	100·4	101	100·6	101·2	101		
23.	Red	101·8	100·8	101·4	101	101·6	101 4		
24.	Roan	100	100	101·2	101·8	104	102·8	101	
25.	Red	101	100·4	101	101·4	101	101·2		
26.	Red & white	101·4	102	101·8	101·6	102	102		
27.	Roan	101·8	101·2	101·4	102	101·8	101·8		
28.	Red	102·4	101·8	103	104	105·2	104	102·8	
29.	Roan	102·6	101·6	101·2	102	102	101·8		
30.	Red & white	101·4	101	100·8	104	105	103·2	103·4	101·4
31.	Red	101	101	101·4	102	103·2	102·2	101·2	
32.	Black	100·8	100·4	101·2	101·8	101·8	102	102	
33.	White	100·6	101·2	101·4	101·2	102	101·8		
34.	Red	100·2	101	101·8	101·8	102	102		
35.	Roan	100·4	101·2	102	101·6	103	102·8	101·8	
36.	Roan	101·2	101·2	101·8	102	104	104·2	104	
37.	Red	100·6	101·4	102	101	101·6	102	101·3	
38.	Red and white	100·8	102	102	102	101·4	102·2	101·6	
39.	Roan	100·8	101·2	101	101·4	102	102·2	102·6	
40.	Red and white	101·8	101 4	101·4	100·8	101·8	102	101·2	
41.	L. Roan	101·4	102·4	102·4	102·2	101·8	102		
42.	L. Roan	100·8	101·4	101·4	100·8	100·6	101·6		
43	L. Roan	102	103	101	102·4	101·8	103	102·4	
44.	Black	100·8	101·4	100.2	102	101·4	102		
45.	Red and white	101·8	102	101·4	102	102	102		
46.	Red and white	100·8	101·4	101·4	102·2	100·8	102		
47.	Roan	101·6	102	101·8	102·6	103	103·4	102	
48.	Roan	101	101·8	101·2	102·2	101·4	103·4	102·4	
49.	Roan	101·6	102	102	102	101·4	102		
50.	Red	101	102	102	102·4	103·8	102·6	102	
51.	Red	100·8	102·2	100·8	102·2	101	101·8		
52.	Red	100	102	101·8	102·6	102·4	102·6		
53.	Red and white	101·2	102	101·4	102·6	103	103·2	103	102·6
54.	Roan	102·2	102·4	101 8	103	102·4	102	102·6	
55.	Roan	101·2	101·4	101·2	102	102·4	103·2	101·4	

VETERINARY NOTES FROM RUSSIA.

During an official tour which I lately made through the remount depots of the Russian cavalry, I found that glanders was by no means uncommon among the Steppe horses of Southern Russia. I naturally asked the veterinary surgeons if they used mallein as a diagnostic agent; but on every occasion I received a reply in the negative; the reason given for such omission being that mallein was worthless for the purpose in question. As such an opinion was entirely at variance with the experience of *nous autres*, I tried to argue and point out the good results which had been obtained with mallein in England and France; but all to no purpose, for most unsatisfactory results were, so it was said, the outcome of experiments in Russia. I can attribute the failure of mallein in that country only to imperfect manufacture.

I am glad to see the remarks you made on *Mallein and the Law* in your leader of the 12th ultimo, in which you allude to the present iniquitous glanders order that "gives power to destroy a £100 horse in which a veterinary inspector has seen nothing save reaction to mallein, on payment of £2." A strong argument, I think, against this law is that it amounts to equine class legislation. Had glanders been as rife among valuable horses ranging in value from a £100 hunter to a £20,000 Galtee More, as it is among one and two figure priced animals; the law as regards the destruction of a reacting animal would certainly not have assumed its present arbitrary form. Efficient separation carried out in a quarantine station, if necessary, with release on reasonable proof of health, ought to be obtainable by an owner who had a horse that was condemned solely by the fact of reaction, and who was willing to pay the expenses of segregation and testing.

While at Borisoglebsk in the Government of Varonej, my attention was drawn to an ulcerative process which begins on the posterior and lateral aspects of the hind pasterns, and not unfrequently causes death by gangrene from extension to the articulations of the foot. All the veterinary surgeons and others from whom I sought information respecting this very peculiar affection, attributed it, in the first instance, to wounds which were caused by other horses during occasions of overcrowding, and which were subjected to the irritating influence of salt runs on the Steppes. This theory appears to be correct, for the disease is found only on the hind feet, is peculiar to horses at liberty; and occurs only in places where there is a large admixture of salt in the ground. In some years it assumes an epizootic form. Among the 800 freshly-selected young remounts at Borisoglebsk, I roughly estimated that there was from 15 to 20 per cent. suffering from this affection. As it is a serious unsoundness in its graver forms, it is reasonable to infer that the total percentage is at least double or treble as high. In some of the depots there were only a few cases, in others none. These wounds, I am told, are often aggravated by the animal biting them. On seeing these cases, I was put in mind of a form of eczema of the coronet which I observed among horses at Singapore (Straits Settlement). I believe it arises from horses licking and biting their coronets after walking through salt water and after a saline deposit has accumulated around the coronets from evaporation. Perhaps Mr. Dellagana or some other veterinary surgeon who has been in Singapore, will give full particulars.

I may add that the horses of the Don are admirably suited for light cavalry purposes. My adventures among them is a story of a "combined calling," which has nothing to say to veterinary literature.

M. H. Hayes, F.R.C.V.S.

Hotel d'Angleterre, St. Petersburg, Russia,
3rd November, 1898.

ABSTRACTS FROM FOREIGN JOURNALS.

Treatment of Lameness Consecutive to Pricks from Gathered Nail by Neurotomy. By Professor Cadéac.

After recovery from all appreciable lesions caused by gathered nail, it is not rare to see lameness persist, which renders prognosis of this complaint extremely difficult. The animal apparently recovered, remains a long time useless. We have seen this fact present in cases of pricks from gathered nail treated by sublimated or sulphate of copper baths. Lameness frequently persists for several months as if the nail had at the moment of its penetration caused lesions analogous to those of navicular disease. Examination of the foot has not revealed any lesion. The pain has a deep origin, and it is always subject to numerous variations. We may see it become considerably lessened during rest and increased by hard work; it is sometimes very much more pronounced at starting than after a certain amount of exercise. We have had the occasion to observe several cases in which our method of treatment has given us the best results.

It is chiefly useful in cases of pricks from gathered nail surgically treated by complete section of the plantar aponeurosis and scraping of the navicular bone. The lameness, not very much on walking during the period of cicatrisation, becomes sometimes very severe at the time when cicatrisation has been completed. The cicatrical retraction and the abnormal adherences which become established are at every flexion of the fetlock, a cause of twitching and suffering. The animal recovered from the gathered nail is so lame that he is useless. It is in these cases, which are very common, that neurotomy renders great service.

This operation does nothing to impede the work of cicatrisation, and allows free movements of the foot and pastern to take place. It should be performed on the posterior branch on the pastern, and on both sides. Thanks to neurotomy animals become rapidly serviceable and suffering and emaciation cease. (*Journal de Médecine Vétérinaire et de Zootechnie, Nov., 1898.*)

[The translator has found frog-setoning useful; and in one case success was obtained even when inserted eight months after the prick.]

Trichinosis in the Dog. By M. Tempel, Director of the Chemnitz Abattoir.

In certain parts of Germany dog flesh enters into the dietary of man, and it is therefore submitted to sanitary inspection as other meat animals. In the Chemnitz (Saxony) Abattoir, during 1897, 289, and in the first quarter of 1898, 147 dogs were slaughtered for human food. Examination of their flesh revealed that 7 (1·60 per cent.) of these animals were affected with muscular trichinosis. During the same space of time, out of 65,042 pigs killed at the same abattoir, only 13 (0·019 per cent.) were trichinosed. Trichinosis therefore seems to be much commoner in dogs than pigs, and as the flesh of the former is often eaten almost raw, under the form of "beefsteak à la Tartare" it results in a veritable danger for man, at least in Germany. The average age of the trichinosed dogs was six years; one of them was twelve years old; so youth is not, for the dog, a necessary condition to infestation. The muscles invaded by preference by the trichinæ are the same in the dog as in the pig. Enquiry, which was able to be made on three of the animals has established that it is very probably in eating rats or the bodies of rats they became infested. This is also the most frequent origin of porcine trichinosis. (*Zeitschrift fur Fleischhygiene, Octobre, 1898.*

Torsion of the Abomasum in the Calf. By MM. Carouge and Prestat.

This was seen in a calf eight days old. Up to the time of becoming ill it had suckled well and digested its food. It was found lying down with its tongue hanging out of its mouth and refusing all food. Colic shortly supervened, the calf striking its abdomen with its hind limbs. The swallowing of fluids increased the colic. Pressure on the abdominal walls caused a well marked rippling sound, whilst succussion gave rise to a fluctuating sensation as characteristic as the undulating fluid visible on the surface of the skin; no faeces were passed and death soon set in. On post mortem examination, the abomasum appeared voluminous and was twisted from left to right, and made a complete turn upon itself, both extremities formed a cord which opposed passage of its liquid contents. Torsion of the stomach has been met with in the dog; Kitt and Cadéac have encountered several such cases; but the above is the first one reported occurring in bovines.—*Revue Vétérinaire, Decembre, 1898.*

Hæmorhagic Septicæmia of Sheep. By MM. Besnoit and Cuille.

After lengthily describing the above complaint the authors conclude thus:—That it is widely spread and that it is their conviction that the majority of great epizootics which are recorded in the history of internal parasitic diseases of sheep and notably of distomatosis were, in reality, only epizootics of hæmorrhagic septicæmia; that in these epizootics hæmorrhagic septicæmia is superadded to the parasitic infestation, and that the enormous mortality that has been recorded should be attributed rather to hæmorrhagic septicæmia than to the parasitic disease itself. They make the same observation as to anthrax. They say it appears to them, without doubt, that many of the so-called epizootics of anthrax have been confounded, in consequence of the great resemblance of its pathological anatomy with hæmorrhagic septicæmia. It is due to an ovoid saprophytic bacterium which grows in the soil, but more particularly, as demonstrated by Hueppe, in wet meadows rich in nitrates. It is also encountered in water, and Kitt has observed that it grows abundantly in well water rich in organic materials; and finally it has been found in fodder and manure. —*Revue Vétérinaire, Decembre, 1898.*

H. G.

The Curative Effect of Tuberculin in Phthisis.—By Rembold.

The author in this work makes a valuable contribution on the tuberculin treatment and his experiences and the results of the treatment possess the merit of having been gathered during a year's attendance at the sick beds. Rembold gives definite results of 70 cases treated with tuberculin and since the conclusion of the treatments 6 years at least have passed away. The most unfavourable cases for the tuberculin treatment are those in which a high rise of temperature is present. The cases reported are divided into three categories according to the degrees of the illness.

Rembold gives a particular account of single illnesses as well as of the course of the illness after leaving hospital. From his experiences Rembold concludes:

1. That tuberculin is without any favourable effect in cases of mixed infection. As a preliminary condition of tuberculin treatment therefore it must be ascertained that such is not present and this must be arrived at by bacteriological examination.

2. In cases of pure tuberculosis of the lungs the exhibition of tuberculin is:

(*a*) Of little use if the affection has assumed great dimensions.

(*b*) In the middle stage of the affection important and continued improvement may be expected.

(*c*) In the commencing stage exceptionally good results occur and in the majority of cases complete cure and in the others noticeable and continued improvement.

3. By minute observation of the indications and renewed examinations controlling the dose, the dangers of tuberculin treatment are minimal.

4. Diagnostically tuberculin is of great service.—*Zeitschrf. f. Hyg. u. Inf.*

What is the Typical Tuberculin Reaction.—By Ostertag.

From the first experiments with tuberculin it was affirmed that no cases could be declared certainly tubercular if there was not a difference of 1·5 C. after injection. Nocard accepted 1·5 C. as a clear reaction,

0·9—1·4 as doubtful, and under 0·9 as valueless. Bang, Eber, Fehser, and Zahn asserted that the temperature ought to be taken every 2 to 3 hours from the 9th to the 24th hour after inoculation.

According to Ostertag's view none of the accepted reactions are quite reliable. Also an extension of the time for taking the temperature is not worthy of recommendation. After the trials conducted up to date it is accepted as proved that in healthy animals which are not affected with tuberculosis, even after inoculation of a dose of tuberculin larger than that prescribed, a rise of temperature above the highest normal point does not arise. It is now established from thousands of registerings undertaken during tuberculin testing that the extreme limit of body temperature in a calf inside the first six months of life is 40°, whilst in older animals 39·5 is not exceeded.

Judging from these trials those cases should be deemed suspicious in which, after inoculation of the prescribed dose of tuberculin, the body temperature rises above 39·5° C. in over six months old animals, and over 40° C. in calves; and further, the highest temperature ascertained after inoculation should be at least 0·5 higher than the highest temperature registered previous to inoculation.

Caution must be observed that already fevered animals be not inoculated. This further enlightenment on the tuberculin reaction will, we have no hesitation in saying, make the number of doubtful reactions hitherto recorded much smaller.—*Berliner Thierarzt Woch.*

G. M.

VETERINARY SOCIETIES.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

OPERATION WOUNDS AND A RESUME OF METHODS EMPLOYED IN THEIR TREATMENT.

By Mr. Flook, M.R.C.V.S.

(Continued from p. 360)

One generally reads of a new antiseptic first as to its power as a germicide, secondly as to its non-poisonousness. But these two things are not the only considerations, its chemotactic action, experimentally ascertained, one would like to know, compared with other antiseptics.

It is, however, essential that we should avoid antiseptics which prevent or hinder leucocytes from acting, for no matter what care be taken an absolutely sterile wound is not believed to exist.

According to Konsuetzeff scarcely 15 per cent. of wounds treated aseptically are sterile, the remaining 85 per cent. are infected often by pathogenic organisms (*Veterinarian*, January, 1898). It has always been the aim of surgeons since the old blood-letting times to get the body into the best state for resisting the effects of operations, but Dr. Schleich (*Lancet*, 10th October, 1891) ascribes a *specific* action to iodide of potassium taken internally, on the leucocytes. He says that it possesses the property of "increasing the activity of leucocytes in places where the circulation has been disturbed by wounds." He also says "In this manner may also perhaps be explained the absorption of effusions and the disappearance of such new formations as———etc. (It may bethat iodides act in this way in actinomycosis).

Before proceeding to mention details of Listerian and other methods I will quote Dr. Barling (paper read before the Midland Veterinary Medical Association) "It is as necessary to hold fast to these old, but well laid down principles of wound treatment which existed before the germ theory was thought of, viz., *dry wounds*, careful appreciation of tissues, drainage, absence of tension, and elevation of the part. These things are as important now as they were, but they are a little apt to be forgotten.'

One of Dr. Barling's conditions, viz., elevation, we cannot fulfil unfortunately. I have emphasised the words *dry wounds* in Dr. Barling's remarks, for with much discharge if the greatest care be not taken, suppuration is bound to follow.

Now I have hitherto spoken of antiseptics *in* the wound, but a good deal has to be done before the wound is made, for it has already been shown that the rendering of the skin perfectly aseptic must present some difficulties, and if human skin be so hard to cleanse, it must follow that in veterinary practice, unless the hair be shaved over the place selected for incision, one must be still further away from aseptic requirements.

For cleansing the skin Dr. Lockwood (noted *Veterinarian*, May, 94), says "The least unsuccessful process appeared to be to scrub the skin with a nail brush, soft soap and hot water, then with soft soap and carbolic lotion 1 in 20.

Next to wash thoroughly with ether, then cover it with carbolic gauze soaked in perchloride of mercury and glycerine 1-2000. This remained in contact for 24 hours without producing eczema or blistering.

The Hands.—Cleanse in the ordinary way with a steam-sterilised nail brush, then soak the hands for a minute in perchloride in alcohol 1-1000."

Cadiot says that Kümmel, Fürbringer, and Ferrilon state that when the hands have been soiled by pus it is impossible to render them absolutely sterile before 28 hours have elapsed, but after stating that the hands of the operator have often been the cause of failure, he advises as *sufficient*, washing and cleansing the hands and arms in soap and boiled water, then washing in alcohol, then in sublimate 1-1000. This practically coincides with what Dr. Lockwood deems necessary.

Lister recommends carbolic acid 1-20 instead of the corrosive sublimate, and I use biniodide of mercury 96 grains to 10 ounces of water; this if the biniodide 1-1000 is equal even, not as it is said considerably stronger than the sublimate of equal proportions, would be twenty times the strength of the sublimate solution above recommended. It causes a smart if one has a cut, but is alright otherwise.

For cleansing the field of operation Cadiot advises washing, shaving, then alcohol or ether, then 1-20 carbolic acid or sublimate 1-1000.

The alcohol or ether are absolutely essential where sublimate solution is used, as the latter will not act in the presence of grease.

Many more complete methods have been advised, and that of Dr. Lockwood is obviously far more elaborate.

Numerous, and often complicated methods are adopted for the sterilisation of instruments and surgical materia, but Cadiot advises immersion during 5-10 minutes in strong carbolic or sublimate lotion brought to the boiling point. "It has been recognised as sufficient" (Bang).

Sponges have been mostly discarded on account of the extreme difficulty found in rendering them sterile.

Dr. Lockwood gives a long list of essentials, and as

sponges are very convenient for use in veterinary practice it may be of interest to compare his procedure with that of others. His plan is as follows: "Soaking in hydrochloric acid, one drachm to theounce for twenty-four hours, then washing in warm sterilised water at 100° F., then immersing in solution of washing soda, one ounce to the pint, for half an hour to remove fat and albumen; they are further soaked in stirilised water, then immerssd in a cold solution of sulphurous acid 1-5 for 12 hours for final bleaching. Lastly, they are squeezed dry and kept in carbolic lotion 1-20 in corked vessels ready for use.

Cadiot says that they may be soaked for 12 hours in potassium permanganate solution 1-1000, then washed in sterilised water, then in strong carbolic lotion, then immersed in carbolic acid 1-20 for two weeks before use. This is somewhat more simple, but Lister believed (I do not know if he does at the present time) that soaking in 1-20 carbolic acid was sufficient, and stated that his routine was to throw the sponges into water to get rid of blood and any putretaction, afterwards washing them in carbolic acid 1-20, sometimes just before using them, without bad result he said, and he did not advise their being discarded in favour of sterilised cotton wool or tissue.

Washing in very hot water with a quantity of soft soap and subsequent immersion in antiseptic solutions is another method, and a simple one.

One great essential during an operation where perfect asepsis is sought is that the hands of the operator *after* being cleansed should not be employed in helping to cast the portions to be operated on, but where they have handled anything non-aseptic they should be carefully rinsed in antiseptic solution.

It is a "general principle" of wound treatment that there should be no bleeding when a wound is being closed, or if there be it should be in cases of wounds that have to be plugged only.

For arrest of hæmorrhage hot water for aseptic reasons is preferable to cold, for tap water is by no means aseptic.

In human surgery, the seizing of an artery by forceps, and allowing these to remain for a time, is *the* method employed for arteries not large enough to require ligatures; with my own cases I have always employed unlimited torsion to arrest arterial bleeding of small vessels.

Kangaroo tendon is highly spoken of for the ligature of large arteries in the human subject. It being said to be more reliable than catgut.

In tying arteries an absorbable ligature may be cut close to the knot, but if of silk one end is cut close, the other left outside the wound.

Chemicalastringents, as Perchloridesof iron should not be used in my opinion, for arresting hæmorrhage during operations.

For the suture of wounds many different methods and materials are employed.

Being once warned by a surgeon against deep sutures, I have never used them where skin sutures would bring the parts into apposition, but Dr. Henry O'Mercy (The Suturing of Wounds, *Lancet*, 18th September, 1897) however, advises the use of "buried absorbable sutures" made as "parallel sutures," as he calls them—(see illustration of "zigzag suture" in Dr. Fleming's Veterinary Surgery. The material he employs is kangaroo tendon.

In Caird and Cathcart's "Surgical Handbook" special prominence is given to what the author call a modified quilled suture, though it appears to me to be more like a Dossiled suture; short pieces of red rubber tubing are used. The needle is passed through the skin some little distance from the edge of the wound, brought out after taking a deep hold, and a piece of rubber tubing pierced and pierced again (not threaded), and again a deep stitch made and another piece of rubber treated as before; similar deep sutures are made until the other end of the wound is reached when a return is made to the starting point as a superficial suture.

My reason for mentioning this suture here is that it appears to me to be an improvement on that of Dr O'Marcy, and one that might be useful in some cases in veterinary practice.

Referring to Anti-Listerian methods, occlusion was the first mentioned. Dr. O'Marcy advocates this method, employed aseptically, with his deep suture, considering that the drainage tube is often the cause of suppuration in wounds. He stated that he was in "his four hundredth series of hernia operations by this method, and the deep buried sutures with over 90 per cent. of resultant cases, and 500 cases of laparotomy, with but a single resulting hernia."

Drainage tubes, however, are in general use. Decalcified bone is often used in the human subject in place of rubber tubing. These bone tubes are made from drilled ox bones, and even from the tibia and femur of the fowl.

The drainage tubes are deeply inserted into the wound by means of forceps, sometimes in case of rubber tubing being removed after 24 hours, sometimes after a longer period.

Passing over the modern analogues to the other old treatments, we come to the dry lint and cotton wool dressings.

A reference to Maw, Son, and Thomson's catalogue will give an idea of the analogues to the cotton wool dressings of old time, which are now in use. I say of old time, yet the rigid asepticists do not permit of any *medicated* dressings being placed over a wound, the sterilisation of dressings being effected by means of heat.

The list above referred to consists of *gauze*, boric, carbolised, cyanide, eucalyptus, iodoform, sal. alembroth, salicylic, sublimate, thymol, and *lints* to correspond, *wools*, peat, wood wool, and sublimate wool.

Of the above, the boric dressing is but feebly antiseptic, the carbolised too volatile, the cyanide much thought of by some, the eucalyptus too evanescent, the iodoform useful, lastly the sal-alembroth is too easily washed away and too irritating. This last assertion is obtained from Lister's own statement. (*Journal of Comparative Pathology*, June, 1893.)

Lister's dressings consist of:—

1st.—Protective of green oil-silk dipped into carbolic lotion 1-20 before application, in it is a hole cut for the drainage tube.

2nd.—A double layer of gauze in carbolic lotion, wrung out as dry as possible.

3rd.—Several layers of gauze applied flat or crumpled up as the necessities of the case may require.

4th.—Eight layers of gauze, between the two most superficial of which a piece of hat lining (jaconet) is placed, or other impervious material. Of this more will be said later on. It should be remarked that the dressings are considerably larger than is required for merely covering the wound, so that the discharges have to go some distance laterally before escaping at the free surfaces of the dressing.

Lister's postulates for a dressing to be ideally perfect are four in number:—

1st.—It should contain some thoroughly trustworthy antiseptic ingredient.

2nd.—It should have some substance so stored up that it cannot be dissipated to a dangerous degree before the dressing is changed.

3rd.—It should be entirely unirritating.

4th.—It should be capable of freely absorbing any blood and serum that may ooze from the wound.

Lister's double cyanide of mercury and zinc gauze answers fairly to these requirements, for although it has feeble germicidal properties it prevents the multiplica

tion of microbes. It is somewhat too expensive for use in veterinary practice.

With reference to postulate four, Dr. Preobajenski has made many experiments with various materials, and he has shown that this requirement is of more importance than the other three put together.

He states that cotton wool is not a good absorbent, but that cotton wool, from which all fat has been removed (absorbent wool) takes up water readily. Peat dressings absorb slowly. Hemp absorbs only from 2.20 per cent. of water, whilst gauze and absorbent cotton wool absorb from 1·86 to 3·12 of their own weights. He states further (a fact long known) that powdering the free surface of the dressing with substances which have a greater molecular adhesion for water than has the wool or gauze increases the evaporation and osmosis. This evaporation he has shown to be of the greatest moment.

In his experiments (on dogs) he made wounds and then inoculated them with putrid material. In the after treatment he obtained healing by first intention when he used gauze, but when he applied ordinary cotton wool he got suppuration and high fever. He also recommends cleansing a wounds *with a solution which provokes coagulation of the blood or lymph—not with alkaline materials which impede it. This tallies with Dr. Ruffer's observations.*

To complete his experiments, wounds, extending to the subcutaneous and muscular tissues, were made in guinea-pigs, and after inoculation with bouillon anthrax cultures non-absorbent and absorbent dressings respectively were applied. With the former the guinea pigs succumbed on the second or third day; with the latter they lived for from six to eight days although the dressings were not removed.

Lister, I believe, has discarded his jaconet as impeding evaporation. I am not certain about the protective, which is essential in skin grafting in the human subject, but in veterinary surgery this is not an operation we are often called upon to perform, and as for plastic operations those in veterinary practice are chiefly operations on the eyelids of dogs. In France that for removing blemishes in cases of broken knees, has been successfully carried out. The occasions requiring it cannot be of frequent occurrence on account of the important question of £. s. d.

Many operations in human surgery we can never be called upon to perform on the horse, and many of our cases, curious and rare, are mere curiosities, fit only for schools where expense is no object.

Where it is worth our while to carry out the details of antiseptic or aseptic surgery we should be in a position to do so, but an approximation to the rigid practice must answer in most of our cases.

Whenever I have had the opportunities of doing nice little operations I have always done my best to fairly fulfil antiseptic conditions. My method of after-dressing has been (after drying the skin) to powder the sutured wound with iodoform and boracic acid, and then to apply Hartman's wood-wool tissue, changing the dressing after the first twenty-four hours and carefully cleansing the parts before renewing it, and I have in most cases been satisfied with the results.

Some few years ago I removed a large fibroid tumour from around the vaginal labia of a small Maltese bitch (it appeared as if the part were enormously hypertrophied, it was so regular in outline). I had dressed with wood-wool plentifully to obtain compression and trusted that she would be alright for twelve hours, but in the morning there was a compress of faeces, causing a bath to be necessary. The parts were subsequently smeared with a little iodoform and boracic ointment once daily. I had used no drainage tube though there was a large cavity, yet there was an almost inappreciable serous discharge, and the wound healed quickly by first intention. This case goes to show the glorious uncertainty which prevails when aseptic conditions are not fulfilled.

With reference to the strict, *aseptic* in contra-distinction to *antiseptic* treatment of wounds, it need only here be stated that, during the operation sterilised water is used instead of antiseptic lotions, and in the after-treatment the dressings contain no antiseptics.

Dr. Watson Cheyne states against the aseptic treatment—"No correction of error is possible," and says, "It is not, I think, a method of anything like universal application." Cadiot says it is not applicable to veterinary surgery.

Still the points in its favour must be borne in mind.

It does not permit antiseptic lotions to touch a surgical wound, and it has been said that there is no good antiseptic which is quite unirritating, and from what we have read of Dr. Preobajenski's experiments. it seems obvious that a sterilised absorbent dressing, which of course is also a filter against external organisms, is all that is required as dressing after operation.

Two other methods of surgical wound treatment deserve mention.

1st. *The Iodoform Treatment*, in which chief reliance is placed upon iodoform (crystals being used, the powder being too rapidly absorbed and causing poisoning) packed into the wound before closing it. It produces frequently very good results, but is said not to prevent erisipelas. It has also produced poisoning. Erichsen states that in excision of the tongue this method has reduced the death rate by one half.

2nd.—*The Antiseptic Cage.* Dr. Benson had an article in *The Lancet* (14th Nov., 1896) on wound treatment, and especially of skin grafts and burns. Weak lotion is poured through the cage on removing the gauze covering. I was talking to a medical man a short time ago and he was telling me that it was the latest thing in wound dressing. I referred him to *The Lancet* quoted from, but of course it is not as new as even that date, though the details may be, for it is nothing but the "open treatment" revived.

Our first tendency is towards something new—like the Athenians of old, then with the knowledge gained, partly by practice of the new method, a return with improvements is made to the old which in its turn becomes new. I do not intend to affirm that no progress is made, *though* Solomon said that there is no new thing under the sun. He did not say that there *never would* be, by the way.

Speaking of progress I am not aware that in Solomon's or any other time they had antistreptococcic serum (introduced, I believe, by Dr. Armand Ruffer and W, Bullock, *The Lancet*, May 2nd, 1896) and a time may come when "that little something in a syringe" will enable us to close a wound with the certain knowledge that all will go well. In the meantime, the following points may well be observed in the majority of cases:—

1st. Cleansing instruments by any thorough means.

2nd. Cleansing the skin and hands as thoroughly as the occasion will permit.

3rd. Using antiseptics in the wound which do not cause negative chemotaxis, and it appears that there is a balance of opinion in favour of those which provoke coagulation of the blood.

4th. Employing absorbent dressings which are not only so-called but are so indeed. This apparently is the most important of all.

That all veterinary surgeons, worthy of the name, take some antiseptic precautions in this year of grace, 1988, there can be little doubt, even if it be but the disinfection of instruments; and if England manufacturers would make the handles of metal in every case as they do abroad, this would be made easier.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The winter quarterly meeting of the Lancashire Veterinary Medical Association was held at the Grand Hotel, Manchester, on Thursday, December 1st, 1898. J. McKinna, Esq., presided, and those present included Messrs. W. H. Bartrum, H. D. Chorlton, W. Dacre, E. Faulkner, A. K. Hart, Jas. Hart, Henry Hall, Alfred Holburn, T. Hopkin, Jas. W. Ingram, Wm. Kendall, Jas. King, Alex. Lawson, Hy. Locke (hon. sec.), E. H. Stent, W. A. Taylor, and J. B. Wolstenholme, of Manchester; Arthur New, Ashton-under-Lyne; J. H. Carter, Burnley; G. Howe, Buxton; Geo. Whitehead, Batley; R. C. Edwards, Chester; Jas. Laithwood, Congleton; R. O. Stafford, Crewe; E. E. Wood, Eccles; W. Ackroyd, Hebden Bridge; R. Rimmer, Kendal; G. G. Mayor, Kirkham; J. Marshall, Knutsford; Geo. Morgan and R. Roberts, Liverpool; Wm. G. Dixon, St. Helens; J. E. Scriven, Tadcaster; Wm. Woods, Wigan; Clarkson, of Garforth, Leeds. Messrs. J. S. Firr and R. G. Gillard, visitors.

Communications apologising for absence were received from Professors M'Fadyean, Penberthy and Axe, and Messrs. Darwell, Drabble, Packman and Abson.

On the motion of Mr. W. A. Taylor, seconded by Mr. E. Faulkner, the minutes were taken as read.

Elections and Nominations.

Mr. Chas Drabble, M.R.C.V.S., Bradford, was elected a member of the Association, the resolution being proposed by the President, and seconded by Mr. Faulkner.

Mr. Wm. Kendall, M.R.C.V.S., Manchester, was also elected a member upon the President's proposition, and seconded by Mr. Harry Locke.

Mr Wm. Woods proposed the election of Mr. Ralph Rimmer, M.R.C.V.S., Kendal, and it was seconded by Mr. Faulkner.

The following were nominated for membership:

Mr. Clarkson, M.R.C.V.S., Garforth, Leeds; nominated by the President.

Mr. Bibby, M.R.C.V.S., Kidsgrove, Stoke-on-Trent; nominated by Mr. Stafford.

Mr. Andrew, K. Hart, M.R.C.V.S, Manchester; nominated by Mr. W. A. Taylor.

Mr. T. Parker, M.R.C.V.S., Whitchurch; nominated by Mr. Wm. Woods.

Mr. W. H. Bartrum, M.R.C.V.S., Manchester; nominated by the President.

Mr. Faulkner drew attention to the loss which the Association had sustained since the last meeting by the death of Mr. Richard Barker, of Middlewich, and moved that a letter of condolence be sent to the widow and family sympathising with them in their unfortunate bereavement.

The motion was seconded by the President, and carried unanimously.

The Secretary read a communication which had been received from Mr. R. B. Freeman, Hon. Sec. to the Congress of the Royal Institute of Public Health, Dublin, acknowledging copy of the resolution sent by the Association to the Veterinary Congress, Dublin.

A letter from the Victoria Benevolent Society was read and laid upon the table.

The Secretary having read a communication received from Mr. Alex. C. Cope of the Board of Agriculture touching upon the International Congress of Veterinary Surgeons in Baden-Baden, 1899, after some discussion it was proposed by Mr. Wm. Woods, and seconded by Mr. Faulkner, that the sum of 24s. be at once remitted by the Association in payment of admission fee for two delegates if it was decided to send them, but if not it would come in for the literature.

It was resolved that on the proposition of Mr. Hopkin, seconded by Mr. Lawson, the matter be further considered and reported upon at the annual meeting.

Election of Office-Bearers for 1899.

Mr. Faulkner, in a few well chosen remarks, proposed the re-election of the President for the ensuing year.

Mr. W. A. Taylor seconded the proposition, which was carried unanimously.

The President suitably acknowledged the honour which they had conferred upon him.

Mr. Taylor proposed Mr. James Laithwood as vice-president, and the President seconded.

Mr. Wolstenholme proposed Mr. James King as vice-president, and Mr. Faulkner seconded.

Mr. J. H. Carter, it was understood, remained a vice-president.

Mr. Wolstenholme, on the President's proposition, seconded by Mr. Hopkin, was reappointed treasurer.

Mr. Harry Locke was re-appointed hon. secretary, on the proposition of the President, seconded by Mr. Hy. Hall.

Mr. Taylor moved, and Mr. Carter seconded the re-election of Messrs. Faulkner and Jones as auditors.

It was proposed by Mr. Alex. Lawson, and seconded by Mr Hopkin that a committee, consisting of the office-bearers of the Association with power to add to their number, be appointed to arrange for the annual dinner next February.

Specimens.

Mr. R. G. Gillard exhibited a pug dog upon which he had successfully performed the operation of gastrotomy in order to recover a lady's hat pin which the dog had swallowed.

The case created considerable interest, and the President moved that a hearty vote of thanks be accorded Mr. Gillard for his kindness in bringing it before the meeting. Mr. Carter seconded the motion, which was carried unanimously.

Mr. E. H. Stent narrated and showed specimens of a case of generalised tuberculosis in a dog. A five-year-old bull dog, the winner of many prizes, was brought to him in a very emaciated condition, with slight cough and shortness of breath. Owner said it had been like that two months. Its temperature was 102·4, and the chest on concussion revealed a dullness, particularly on the right side. His diagnosis of the case was that of consolidated lung, or neglected pneumonia. He painted the side with tincture of iodine, iodide of potassium, and ordered a milk and beef tea diet, but as there was no improvement in the animal's condition the owner destroyed it. On post-mortem Mr. Stent was surprised to find the glands of the chest an enormous size, they filled nearly all the chest. The kidneys were splendidly marked specimens of tuberculosis. The liver was affected, in fact all the glands of the body appeared to have contracted the disease. The lungs appeared to all purposes healthy. On inquiry the owner said he had fed the dog on raw liver, on which at times he found nodules, and no doubt the dog had got the disease in the feeding. Continuing, Mr. Stent said he happened to make post-mortem sometime ago on the dog's parents and there were no signs of the disease at all. Another point, and that was the dog did not like milk. The dog's chest was covered with nodules similar to those found in cattle. The bowels were also affected. That it was a case of tuberculosis was verified by microscopical examination.

Mr. Wolstenholme: I have met with tuberculosis in the dog, and it is just possible that the disease is more common in that animal than we give credit for. We do not go to the same trouble of making post-mortems on the smaller patients as we do on the larger ones.

Mr. HOPKIN : I wonder what is the action of tuberculin in these cases ? To my mind it looks like a case of tuberculosis from inoculation.

The PRESIDENT proposed that a very hearty vote of thanks be given to Mr. Stent for kindly bringing the case and specimens before the meeting. Mr. Wolstenholme seconded, and the proposition was carried unanimously.

Mr. BARTRUM, in introducing his new system of tethering horses in railway horse boxes, remarked that the carriage of horses was performed before the railways were constructed. The first trace we had of it was a horse box taken by road for the purpose of moving race horses from one meet to another. When the railways came upon the scene they simply copied this road horse box for their first carriages, and even now they had not got very far away from it. He then explained the different methods adopted by the principal railway companies of securing horses in their horse boxes. The disadvantage of these fastenings was that they kept the objectionable bottom rope, which was the cause of many accidents to horses, but with his arrangements it was absolutely impossible for the horse to get its foot over the rope because the horse being fastened on the front noseband only took the rope higher out of its way when it plunged. Concluding, he pointed out the difference between the English and Scotch laws regarding the position of a consignee receiving a horse that had been injured in railway transit. In England negligence on the part of the railway company would have to be proved before any compensation could be granted, whereas in Scotland the railway company would have to prove that they had taken sufficient care of the animal in their charge.

Mr. DACRE expressed his indebtedness to Mr. Bartrum for introducing a matter of somewhat unusual interest. There were very few who had not met in the course of their practice cases where horses had been seriously damaged in the box while being carried by the railway companies, who, however, would never admit their liability in such cases. The injuries which had come under his notice had been to the front of the face and these were caused by the way in which the horses were shunted at the sidings. What struck him when Mr. Bartrum was showing his ingeniously contrived head stalls, was that it might be a good idea to pad off, or protect, that portion of the face which was usually injured in a collision of that sort. It was extremely hard for a quiet horse to be carried a matter of twenty miles only, and be injured as he had described.

Mr. HOPKIN opined, having seen a good number of injured horses, that the accidents, generally, arose from rough shunting and from the peculiar character of the horse. A horse that had travelled all over the world would, most likely, in a very short journey, become unmanageable and seriously injure itself. The principal injuries to horses in railway transit were neck broken, spine and face injured. Would it not be an advantage to remove the manger, as he did not see the neccessity for it, and it was a most fruitful source of accidents to horses. He suggested the carrying of the horses crosswise in the horse box as he understood they did in America. If that could be done the injuries would be less and not so serious as under the present system.

Mr. HART agreed with Mr. Hopkin as to the carrying of horses crosswise. This was the practice in Ireland, where there were seldom any accidents. There were no mangers in the Irish horse boxes.

Mr. FAULKNER expressed his indebtedness to Mr. Bartrum for having brought his subject before the members. If they could do anything to minimise or remove the serious injuries which horses sustained in railway transit it was their bounden duty to do so, and they would be deserving not only of the thanks of the public but of the profession. He had seen some dreadful injuries to horses in railway transit, caused, he thought, through their being fast in the horse box. Now, if they had a certain amount of play as depicted in Mr. Bartrum's apparatus that would be a material factor in many of those mishaps and he would like to hear Mr. Bartrum's experience of the working of the new system. The number of horses carried under the system in a given time compared with the old system of tying.

Mr. HOWE hoped Mr. Bartrum would bring his patent under the notice of the Royal Society for the Prevention of Cruelty to animals. In that way it would get publicity.

Mr. BARTRUM, in responding, said he would very seriously question the advisability of removing the manger *in toto*. He did not think it possible to carry, comfortably, the horses in a transverse direction. The English horse boxes were not wide enough. In reference to Mr. Howe's suggestion that the system be shewn to the Royal Society for the Prevention of Cruelty to animals he might say that nearly eighteen months ago he shewed it to that Society's Secretary, who addressed him an exceedingly nice letter in complimentary terms on his apparatus. Replying to Mr. Faulkner's question as to the result of the trial of the new apparatus, the Midland Railway Company had for eighteen months been running boxes with it in. Lord Lonsdale, to whom he had shown it was more than satisfied with the twelve months trial of it.

The PRESIDENT proposed a hearty vote of thanks to Mr. Bartrum for his kindness in introducing his new system of tethering horses in railway horse boxes, He was sure the members felt greatly indebted to him for doing so as it had afforded them considerable pleasure and much instruction. They were always desirous of minimising the pain and suffering of animals in transit. Mr. Bartrum's method was by far the best he had seen.

Mr. FAULKNER, having seconded the proposal with pleasure, and expressed the hope of seeing Mr. Bartrum amongst them on many more occasions, it was carried unanimously.

Mr. WOLSTENHOLME exhibited the skull of a horse—with extensive absorption of bone from the face and lower jaw due to epithelioma—together with sections from the same shown under the microscope.

Mr. JAS. KING quoted and submitted a specimen of the case of a pig with two swollen joints. He examined the animal for tuberculosis, but could not find any lesions of the disease. The peritoneum was quite smoth and bright. The pig weighed 102 lbs., and, with the exception of the swelling, which he put down to rheumatics, he passed it as fit for human food, but on cutting the carcase up one or two little symptoms of tuberculosis were seen in the bones. On discovering this the carcase, was, of course, condemned. He submitted a specimen of another case—that of swine fever—in order to show how far this disease can be advanced without indicating it on the outside. On November 26th when he inspected some pigs brought from the Croft at Beswick, they seemed alright and perfectly healthy. He saw them again on the following Monday when they were in like condition and he passed them as sound. However, in the afternoon two of them began to look a little dull. The men sent them to the abattoir, when it was found on post-mortem that the lungs and bowels of both pigs were affected with swine fever. His other specimen was one of necrosis in a calf's liver.

Mr. FAULKNER showed a specimen of osteoporosis occuring in a six year old chestnut lorry horse.

A vote of thanks to the President terminated a most successful meeting.

NATIONAL VETERINARY ASSOCIATION.

MEETING AT LEEDS, AUG. 11th and 12th.

SECOND DAY.

The PRESIDENT : I have now the pleasure to open our second day's proceedings. After yesterday's success we may look forward to another very pleasant day, and I will at once ask Mr. H. Thompson to open the discussion upon Mr. Villar's paper, on "Some of the Diseases of the Udder and Teats of Cows.

Mr. THOMPSON (Aspatria): Our friend, Mr. Villar, has prepared a very elaborate and exhaustive paper. I see that he has taken an extract from the Royal Commission on Tuberculosis, as to the notification of diseases of the udder. Now if this had been in operation I myself should have been very busy this last month, because in Cumberland at the present time sore udder is almost an epidemic. We have from eight to ten cases in a day. If they had had to be notified we should have been very busy, and kept the inspectors going. But I am afraid before that is accomplished we shall have to have tuberculosis and abortion scheduled as infectious diseases. The causes of mammitis are many, traumatic and otherwise. The cause we have in Cumberland is the hot weather, and the cattle galloping about the fields being pestered by warble-fly, the female of which deposits her ova in the backs of the cows making them gallop up and down the pastures, and, if possible, to rush into a pond of water or a river and stand mid-leg deep in it. In that case the cold water treatment does not act very well. Then again we have it from the cattle galloping and then standing underneath the trees and standing in the draught. We also have it from the doors being badly made and a draught coming through the bottom. The cow standing next to the door seems to be the most bothered by mammitis through the cold air acting upon the posterior part of the gland. Now when we have simply a sort of catarrh of the gland, where we have straw-coloured water and a little coagulated milk, that is what is called simple inflammation of the mucous membrane—catarrh of the gland. That is very simple and when taken in time very rarely turns to anything serious, but when the disease goes on until it turns to suppuration that is a different thing altogether. The greatest difficulty that we have in our neighbourhood is with the cows that are on the point of calving, and they are subject to inflammation of the mammary gland as the grazers are. But the greatest proportion we have is with the grazers which have been milked and dried and put out to grass and a little milk left in the gland, which becomes invaded by organisms, as Mr. Villar says. I quite believe it is the pathogenitic organisms which get up into the ducts which produce the disease. In some cases you may have straw-coloured fluid without a smell, but when you come to draw the material out of the teats, and it is a sort of dirty brown colour with a smell, mischief very soon extends to the wall of the gland, then we have the interstitial inflammation. Cows that have turned the point of calving when they are disordered are very difficult to deal with, because as the time goes on for the cow to part with the calf the mammary gland becomes congested, and therefore it is very difficult to deal with indeed. My mode of treatment in the cases where the cow is about to calve, if you can get the people to do it, is to foment—I will take hot water this time—foment the quarter with hot water for two hours, then wash it with cold water for five minutes, rub it dry with a rough cloth, and then, if you like, send some liniment to rub the udder with. Unless it can be fomented twice a day for two hours leave it alone, and take cold water and wash it well with it, rub it dry, and also apply the liniment. I differ with Mr. Villar ; I do not believe in drawing the teats too frequently. Leave the udder alone, and dry it out once in twelve hours, night and morning. That is quite sufficient. To guard against the retention of pus people are very fond of cutting off the teat ; some people split it with a French knife. Now there is a proper time to cut the teat, but that ought never to be done in my opinion until there is suppuration. I let the matter be fully formed and then cut the teat off, and it liberates the pus when it is nice and fluid. With reference to the constriction of the duct that is a very common thing, sometimes at the end of the teat and sometimes half way. I quite agree with Mr. Villar, that in putting a syphon in the teats you must be very careful. In some cases I have been successful by cutting the syphon, making it about half length—that is, supposing the obstruction is close to the end of the teat. I put a half-sized syphon into the teat and hold it in position by putting on an indiarubber band, stopping up the hole in the syphon. I let that remain in for four or five days. I have sometimes been successful, but I must tell you that it is oftener the other way. With regard to tubercular disease of the udder, I cannot agree with my friend, Mr. Villar, with reference to the five per cent. We certainly cannot boast of having five per cent. of tubercular diseased cattle in our district : I should say two per cent. is nearer the mark than five. Bloody milk is a thing we come across very frequently in our district, from three or four days after calving to a fortnight or three weeks, perhaps only from one teat, as Mr. Villar said, from ulceration of lactiferous ducts, or congestion. In respect to overstocking, like Mr. Villar, I cannot remember a case where overstocking ever produced mammitis. There is no doubt that animals may suffer a great deal. Like Mr. Villar, I have seen gentlemen who have let their cows calve and stand for four days and never take a drop of milk from them and never take any harm from mammitis by overstocking. A good many people in our district are now putting their calves to the cows to prevent milk fever ; and when you come to get a cow from that quarter where there has been overstocking they do not give their milk very freely, and they are very bad to milk sometimes, and these cattle will not let their milk down to anybody. I have seen cows which when a man sat down to milk them would not yield their milk at all ; but when a dairymaid was brought, and she began to sing, the cow began to let the milk away. There is a funny sort of cow belonging to a stonemason, who lives about two miles from my place, which will not give any milk until they bring a little girl with a fiddle on which she plays. With regard to cow-pock and other vesicular diseases, I think that belongs to the south. I never saw vesicles on a cow's udder except when we had foot and mouth disease, and then we had plenty. We find no vaccine pock in Cumberland—at least I never saw any. I had a very remarkable case about two years ago. A man had two stallions and very good brood mares. I fancy the teeth of the foal hurt the teat, and the foal was very bad with strangles. The discharges from the nostrils had, I fancy, inoculated the udder. Inflammation set in which went on to such an extent that I never saw such an udder in all my life. One morning I went to see it, and the poor brute was lying on her back against the wall and pressing the udder. I put my finger on the teat and it yielded, and I just gave it a nick with my lancet. I should think there was a pailful of dirty pus discharged, and there was a great deal of coagulated matter which came away as well. I put my fingers into the opening and found that the gland was entirely mortified. I made an opening about nine inches long right across the length of the udder, got both hands in, and removed it altogether. It came out like the kernel of a nut, and weighed six pounds. There was very little hæmorrhage, but I could feel the blood vessel by putting my hand up inside. I tied the vessels and

put in some antiseptic material, and the animal recovered. Ten days afterwards, however, she took septic inflammation of the lungs and died with hæmorrhage from the nose. With regard to gangrene, our friend seems to think that we have not much of it. I have seen a number of cases of gangrene in the cow and in the sheep. Sometimes it goes on and kills the animals; at other times I have seen the gland slough off entirely, leaving where the blood vessels are a sort of fleshy fingers hanging down. If you take hold of those with your hand you will find they are very brittle, and will bleed very much. I always put a clamp on to them, and take them off with a hot iron. This is where nature has not herself thrown off the diseased portions. We have that very often in Cumberland. In treating those gangrenous cases, the only thing I do when I see a dark blue colour, and the dirty, nasty, fœtid matter, is to rub them over with a little common green tar and leave it. Of course I give antiseptic medicines, but I must pass over them. I will only say that I give two ounce doses of sulphate of soda put in the drinking water. With regard to paralysis of the gland, this is also occasionally met with. I have known cases in which cows—which have been noted as very heavy milkers—giving as much as 14lbs. and 15lbs. of butter a week of seven days, have been put to the male and then sold for a big price, and when they calved the gland is distended and big, but not a drop of milk could be found. I have met with several cases of that kind, and it causes a great deal of unpleasantness, particularly amongst neighbours, where a man gives a cow a splendid character for being a good milker. I think the best treatment, if people will only go to the trouble, is cold water. It has a tonic effect upon the healthy structures of the body, and it assists the physiological action of the healthy structures to throw off the pathological and morbid material. The way of applying the cold water is to put a loin bandage on behind over the tail in the same way as a pair of stays, and then get some linen from the housewife and pack it nicely round the inflamed gland and wet it with cold water, and let it stick there. If that is not the best treatment the one I have in my pocket is. I will bring it out and let you see it. It is a rubber injection apparatus. I have been treating sore udder of the different kinds I have named with this for some time. I inject 1 drachm of boracic acid dissolved in 10 oz. of warm water into the gland. It softens all the morbid material; it is a good disinfectant, and you can pull it all out again. Two oz. of sanitas in half a pint of warm water should be injected into the quarter; or 2 drachms of B. P. carbolic acid and 10 oz. of warm water injected into one of the quarters. Or, you may use iodide of potassium, which has now come so much to the front. I may tell you honestly I have been very successful with this treatment either when rubbing in with liniment, or giving any medicine, merely injecting into the gland and leaving it there for twelve hours, then drawing it out, and injecting again. Within the last three weeks I have saved several quarters which would have been lost had it not been for injecting and cleaning them out. With regard to milk fever, I have not seen a case to my recollection when there was sore udder. I most heartily congratulate our friend Mr. Villar for bringing such a very excellent paper before this meeting, and I hope it will not be the last paper he will introduce for discussion at meetings of the National Veterinary Association.

Mr. Hughes: I have to give my meed of praise for such an eminently practical paper. I think it is remarkable for most careful observation and sound scientific reasoning. With regard to infection in mammitis I thoroughly endorse what Mr. Villar says. I think the majority of cases are due to infection of the mucous membrane of the ducts, and to carelessness in not removing infective material from the hands as well as from the cows' quarters. I do not agree with Mr. Villar when he says he derives no benefit by slinging in mammitis. I think it is of very great benefit and also tends to alleviate the suffering of the animal. If we have an inflamed organ situated as the mammary gland is, and allow it to hang down, I think it itensifies the pain considerably, and the mode of packing I have adopted is just to get a piece of flannel and make a hole for each teat and then pack it in cotton wool or nice clean wool from the sheep. I think it gives comfort and helps them considerably in getting over their trouble. The washing out of a quarter, which Mr. Thompson has referred to, with any antiseptic, more especially boracic acid or very weak iodine, has a very beneficial effect. The line of treatment in future will, I think, be more especially directed to the application of antiseptics internally than to outward applications. I myself have never known a case where after mammitis a calving cow has had milk fever, neither have I known overstocking to cause mammitis unless there is an infection added.

Mr. Olver: I beg to give my thanks to Mr. Villar for what I consider a very excellent paper, in fact I do not remember a paper on this subject which contains so much not only theoretical and scientific but also practical matter, as does the one placed before us. I agree with the paper very largely, and to a considerable extent also I am in accordance with our friend Mr. Thompson in the remarks which he has made. But there are one or two questions I would like to say a few words about. The first point in the paragraph at the bottom of page 90: "The Swedish veterinary author Vennerholm asserts that the sole cause of mammitis is infection, meaning by this that all inflammations of the udder are due to the absorption of some infective material, some micro-organism." Further on Mr. Villar adds, "Although I venture to think such an extreme view as Vennerholm takes cannot be substantiated, there are, doubtless, very strong grounds for asserting that the majority of mammary diseases are infective processes due to the absorption of some septic material." The tendency of the age in all these matters is to find that some micro-organism produces practically everything, but if we admit that very nearly all mammitis is due to the presence of some organism then I think we have to ask ourselves a question which has been forcibly put by Mr. Thompson in opening the discussion on this paper. Why is it, he asks, that in his neighbourhood at the present time (and it also applies to my own practice) there is a perfect epidemic of mammitis? In my experience where I get one case of mammitis in the winter with cattle lying in their sheds, whether they be sanitary or unsanitary, I get 10 or 20 when they are grazing in the fields. At the present moment I have no hesitation in saying that there are at least 50 or 60 cases of mammitis under treatment in my practice, 19 out of every 20 of these cattle are grazing in the fields. It says in the paper that this septic material enters the teat after it has been milked. The day before I came away I opened two large abscesses in a heifer which had not only never had a calf but had never been served by a bull. The majority of these cases are cattle which are grazing in perfectly healthy districts, some of them healthy limestones, while others are low meadows. Looking at it in the light of a pure inflammatory action, as the beginning of most mammitis cases are, I fail to see where the septic organism is found to enter. I admit that after your mammitis cases have proceeded some short time and you have taken them in and put them under treatment, and where they are under conditions in which they are likely to get septic condition, when pus follows, then I think you have something as the result of a septic organism. But I am bound to say I fail to follow that the origin of the majority of cases of mammitis is due to septic organisms. Due to some organism which has yet to be found probably it may be, but I agree with Mr. Thomp-

son that these cattle grazing in the fields, whether they have ponds to go in or not, run about in hot weather and then get chilled, and there I think you get the first catarrh or first inflammatory process, and subsequently you may get the septic organisms spoken of. Further on Mr. Villar says—as was mentioned by Mr. Thompson also—that gangrenous mammitis is practically unknown in this country. With this I disagree. Gangrenous mammitis is in my experience by no means uncommon, and I am sorry to say that within the last week I have lost two cases on one farm. I also find that this gangrenous mammitis is not at all infrequent in heifers which had never had a calf, but if you get acute mammitis it not uncommonly runs on to gangrene in a very short space of time, sometimes in 24 or 48 hours. It is not at all unusual, as Mr. Thompson said, to find a distinct line of demarcation in a certain part of the udder, and the whole thing to slough out . . . . . With regard to obstructions in the teat, I have come to the conclusion long ago that as a rule the better plan is to let them severely alone. If you never touch them, if you pass no syphon up the teat you get no septic or other organisms. Nature herself will absorb the milk in the gland, and as a rule we have no trouble whatever. On page 94 Mr. Villar says, "Twenty years ago Professor Axe, in his lectures, taught that mammitis was at times of a contagious character, though it rarely existed as such in this country." He goes on to say that until recently he was sceptical as to its ever being contagious. In my experience I have had several cases in which I have not had the slightest doubt as to mammitis being contagious. Indeed a very short time ago I went with a neighbouring practitioner to see some cases of animals which were said to be suffering from the effects of sewage poisoning, and they were distinctly suffering from contagious or infectious mammitis. Almost every animal in the shed right the way along, some 15 to 20 of them, were distinctly suffering from this form of disease. Then as to tubercular mammitis, this, as Mr. Villar says, from the public health point of view is a very important matter. He places the percentage I think at something like 5 per cent. I take it that varies very considerably according to the district you are in, and the age of the animals on the different farms. I admit with him that it is difficult to diagnose tubercular mammitis, but I think with fairly careful examination, even if you do not examine the milk, as he very explicitly states here, by feeling the gland itself, which is generally more or less nodulous, you can give a very good opinion as to its being tubercular or otherwise, and of course we all agree that it is quite time that this was taken public note of and that tuberculosis should be scheduled. In the bottom paragraph Mr. Villar says that he has never known a case of parturient apoplexy when you have some trouble with the udder. I will go a step further and will say that I have never known a case of parturient apoplexy—and I have watched them very carefully for 20 years—where a cow has never been milked. I may go further and say I have never known a case where the calf was left on the cow in the natural condition. It is my advice to my clients to always allow the calf to remain with the cow for the first week, and when that has been done I have never known a case of milk fever. Mr. Thompson has shown you an antiseptic syringe. I quite agree with this treatment. I always do it. I use a syringe of that class, and always use the agent Mr. Thompson has named -- boracic acid. In my opinion it is by far the best treatment.

Mr. LAITHWOOD: I agree with the previous speakers in my commendation of Mr. Villar for his very excellent paper. I think great credit is due to him for the pains he must have taken and the work he has done in preparing it. I quite agree with him in the majority of his assertions. The milking of cows for four or five years was mentioned, and no doubt that can be done with a great number of cows. But there are other things to be considered, namely, the renewal of our herds, which, if that was carried out to any great extent, would be a great difficulty. In our neighbourhood we are anxious to get a calf from every cow once a year, so that we can rear up some good young heifers to take the place of those that are turned away. There was also mentioned a stupid cow which would not give her milk without the aid of the fiddle. I am led to believe that the system regulating the supply of the milk is an involuntary one altogether. The cow cannot at her own will let it down or keep it up. I am ready to believe that this is an involuntary act, and therefore it is only when the cow is in a good humour that she is able to give the milk in a proper condition. With regard to gangrene I have rather frequently seen cases of that, for in my neighbourhood the farmers are exceedingly slow in sending for the veterinary surgeon, and when he gets there he will generally find very bad cases indeed. Very frequently I have seen on my arrival a well-marked line of demarcation between the dead and the living tissue. Unless you can keep up the appetite of the animal and prevent the absorption of the putrid element into the circulation, it becomes a very serious case. But I have always endeavoured to separate the diseased portion from the living as early as possible, and in more than one case I have taken away half the udder. Unless you prevent the hæmorrhage by ligatures or the hot iron it is a very dirty operation indeed. I always maintain that the sooner it is away the better for the animal, as the less the chance of septic absorption into the circulation. I agree also with non-intervention in those cases of small tumours in the teat, or thickening in the walls of the duct; it is the best treatment in my opinion. If you attempt to pass anything into the duct to open it out you may frequently cause more injury, and the death of the animal may result. It is also mentioned by Mr. Olver that he had never seen a case of parturient apoplexy when the calf had run with the mother for some days. I am able to say that within the last six weeks I have seen three cases of parturient apoplexy where the calf never left the mother. They had never been milked at all except what the calf had taken from them. It has been the rule in my practice never to part a cow from her calf where she was at all likely to have milk fever. My client in the case I have mentioned was a very careful man and had obeyed my instructions to the letter. I believe it is a good thing not to part the calf from the cow but it is not a certain preventative of milk fever. I cannot quite agree with Mr. Olver as to his method of diagnosing tubercular mammitis. I say it is impossible for him or anyone else to diagnose tubercular mammitis in the early stages of the disease.

Mr. GOOCH: As to the voluntary or involuntary action of the cow in withholding her milk I think she can hold her milk at will, and that because I believe the muscles of the sphincter of the cow's teat are quite of a voluntary nature. With Mr. Olver, I cannot agree with the Swedish author as regards the entire cause of mammitis being a septic infection or due to some micro-organism. I think a much larger percentage is due to traumatic influences. Another cause, which occurs a great deal in our district, which is a grazing district is this. We have cows or heifers which have had one or two calves, and they are not properly dried before they are turned into grass; there is a retenion of milk, and we have mammitis set up in a great number of cases. I believe that the essayist himself bears this out on page 96, where he says, with regard to overstocking, "This is not followed by mammitis, and I consider overstocking does not of itself cause inflammation of the udder, but that by increasing the bulk of the organ and teats it renders them more liable to external injury, and must therefore be said to predispose to mammitis." I conclude therefore the essayist is of the same opinion as myself, that is, to

a large extent, septic influences, micro-organisms, have little or nothing to do with the origination of mammitis. I think a great deal of pain is caused by slinging the udder. The usual treatment carried out, not by the veterinary surgeon but by the owners, is to have the ordinary slings with four holes for the teats filled with spent hops. With regard to gangrenous udders, I think we very frequeutly get them in my district, and I should like to ask the essayist, in those cases where he has stated death has occurred within 48 hours, what is the cause of death if it is not gangrene? With regard to the vexed question of spurious cow-pow, I, like Mr. Olver, think it is a very difficult thing to deal with. I am sorry to say I have had one particular case in which it has been almost impossible to stop the malady. It was in a herd of beautiful Lancashire cattle, all pedigree. It started not in an old cow—I must differ from the essayist because he says he has never known a maiden cow have it—but in a heifer, and before long we had the whole dairy affected. I advised the owner to get rid of the entire dairy. That was done, and the place was left for three months, and thoroughly disinfected. It was lime-washed, the whole of the walls, the whole of the mangers, and the whole of the floors were lime-washed with a strong solution of carbolic acid in the lime-wash. He bought a fresh herd, and in less than two months he had them all down again. I saw three of the milkers all affected at the same time, which proves it is transmissable to man. An ointment which I found very efficacious indeed consisted of boracic acid made up with Jeyes' fluid and vaseline. It is nearly three months since we broke up the second herd, selling all that were well, and the owner is very loth to use that cow-shed again. I agree with Mr. Olver with regard to milk fever, although I cannot go so far as he does and say I have never seen a case in which we have not had parturient apoplexy where the calf has been left upon the cow. I most certainly adhere to the principle of assisting nature by allowing the calf to suck the dam for a week at least, and I believe parturient apoplexy to a large extent would be diminished, if not eradicated if that system were carried out. I must, however, say I have had cases of parturient apoplexy in cows who have had the calves with them and who have never been touched by the milker. Mr. Olver asks me to say one thing—he did not mean to infer that in the first stages of tubercular disease you could detect it in the udder, but in the long-standing stages where you get the nodular condition of the udder.

(To be continued.)

Royal College of Veterinary Surgeons.

DECEMBER EXAMINATION, 1898.

The Written Examination was held in London on the 9th, and the Orals and Practicals on and between the 12th and 15th December.

The following students of the Royal Veterinary College passed their Final Examination and were admitted Members of the Royal College of Veterinary Surgeons:—

Mr. E. A. Batt	* Mr. J. McLeod
W. Cranston	† P. J. Simpson
E. T. Goodall	T. J. Symes
* H. Gamble	J. C. Sanderson
* F. H. Ingersoll	J. P. Heath
C. H. Hylton-Jolliffe	J. Robertson
G. P. Knott	J. J. Kelly

The following passed their Third Examination:—

Mr. H. G. Allen	Mr. H. Mosely
H. Burrell	G. V. McNaboe
F. W. Cousens	J. C. Mumby
D. S. Dickman	J. P. Stableford
D. G. Galt	A. Spicer
C. G. Hearn	J. E. L. Still
* G. T. Jackson	E. A. Wilshaw
B. L. Lake	

The following passed their Second Examination:—

Mr. T. G. Bush	Mr. W. M. Rowston
W. G. Evans	C. E. Turvill
G. May	* H. E. Whitemore
R. E. Mosedale	* R. H. Pinching
* J. Nicholas	R. Peddie

The Following passed their First Examination:—

Mr. B. H. Benson	Mr. A. C. Lloyd
A. A. Donnelly	R. Morford
A. Edgar	G. H. Rainsforth
N. Gilford	J. R. Steevenson
M. J. Kelly	R. P. Williams
R. E. Klyne	G. H. Ward
W. G. Litt	

Marked thus * passed with 2nd class honours.
" " † " " 1st " "

ARTHUR WM. HILL, *Secretary.*

EXTRACTS AND NOTES.

INOCULATION FOR RINDERPEST IN INDIA.

Veterinary-Captain Raymond, superintendent of the Civil Veterinary Department in Bengal, has just published a further report on experiments with rinderpest. It is issued as one of the special Veterinary series of "the Agricultural Ledger" by the Government of India, and opens with the record of a triumph of preventive inoculation, one hundred and seven head of cattle having been inoculated in September of last year, remaining immune through the epidemic of rinderpest at Kanti near Mirzapur. In January last typical rinderpest broke out in Harsair and Mr. Toomey's cattle were inoculated. In all two hundred and sixty-one were dealt with, and the whole of these remained free, though the disease prevailed in the district for a long time and subsequently reappeared. Many of the cattle went to work the following day without inconvenience. Other experiments at Belgatchia were also conducted and are duly reported upon. The experiments tended to show that the bile method may be safely used with advantage on Wards' Estates, etc., when rinderpest is known to be raging in the neighbourhood, for it would probably confer immunity long enough for the disease to die out in the surrounding villages. From the Ward's Estates its use might spread as the neighbours acquire confidence. Veterinary Captain Raymond holds that it has been clearly proved there is no danger of the inoculation with bile conveying rinderpest, if properly performed. It has also been proved that the operation does not interfere with the ordinary work of the bullocks For the present the buffalo bile method is the simplest way of conferring temporary immunity on cattle. But it has the obvious drawback that a delay occurs in obtaining the bile in necessary quantity and purity. It cannot be obtained from the cattle, for local reasons, in Bengal. A further delay of about seven days occurs while the inoculated cattle are acquiring immunity, because they

do not become immune at once. Hence twelve very important days, at least, are lost. He made a few experiments with a view to testing the serum method of treating rinderpest, because it has been laid down as a principle that immunity extending over a very long period, can only be acquired after an attack and recovery from rinderpest. The preliminary difficulty was to control the strength of the attack which is to confer immunity, otherwise the animal may be killed; but though he is not yet prepared to offer a definite opinion as to whether a constant control can be maintained over the virulence or mildness of the disease, it seems probable from what he has done, that by injecting virulent blood into a healthy animal, and immediately afterwards injecting defibrinated blood taken from an immunised case, the healthy animal becomes subject to an extremely mild attack of rinderpest and recovers. This being so, though the method may not commend itself to the ryots, Surgeon-Captain Raymond recommends running a mild attack of rinderpest through a herd, isolated for the purpose, an operation which would result in setting the owner's mind at rest for possibly some years. As to the treatment of blood with citric acid and citrates as recommended by Dr. Edlington Captain Raymond considers it to be unsuitable for Bengal at present.—*Bombay Gazette.*

THE BIOLOGY OF YEAST.

There was a large gathering at the Chemists' Assistants Association, on November 10th, to hear a paper by Professor J. REYNOLDS GREEN, F.R.S., on the yeast-plant.

He said it had always attracted considerable attention from investigators, as it was considered the representative of a large class of ferments. It was in 1680 that attention was called to the apparently uniform presence of a scum in the vats in which alcoholic fermentation was conducted, and an examination was instituted to find out whether the scum had anything to do with the process. It was found to be made up of small granular bodies, which, the observers correctly surmised, derived their sustenance from the surrounding liquor. The organism was examined by many other scientists, and finally found to be vegetable, and was classed among the fungi under the name *Saccharomyces*. In 1830 investigators at Jena and Berlin succeeded in tracing the action of the yeast-plant in connection with the formation of alcohol and carbon dioxide from sugar.

Professor GREEN went on to say that it was not his intention to discuss the general question of fermentation, confining his remarks to the biology of the yeast-plant. Pasteur, he said, found that in

THE NUTRITION OF YEAST

a second process went on, and as his work was quantitative he detected a discrepancy of four or five per cent. between the amount of sugar fermented and the alcohol and CO_2 produced in the process. He recognised succinic acid and glycerin among the products of the activity of yeast. He also investigated the varying degrees of activity of the yeast-plant under varying conditions, such as the presence and absence of oxygen. In the absence of oxygen ordinary organisms, except the bacteria of putrefaction, cease to live. Pasteur found that, although yeast worked well in the presence of oxygen, it worked even more energetically in its absence; this, he explained, was because yeast attacked sugar for the sake of its oxygen. His hypothesis was that "fermentation is the expression of the life of the organism in the absence of oxygen." He calculated that in the absence of oxygen the activity of yeast is about eight times as great as in its presence; and it was on this fact tha the based his hypothesis. But, said his opponents, if this was true then yeast should not cause fermentation when oxygen was readily available.

During some interesting experiments subsequently made with a view to finding out whether there was any variation in the products of the ripening of certain fleshy fruits, when the ripening took place in an atmosphere from which oxygen had been removed, it was found that the fruit constantly gives off CO_2, although oxygen was absent, and that various alcohols and esters resulted though no ferment was found in the pulp. From this it was concluded that in the absence of oxygen the protoplasmic cell contents decomposed sugar with the formation of alcohols.

In opposition to Pasteur's views, it has been argued that the normal work of yeast on sugar is nutritive, and not respiratory, but that in the absence of oxygen the action of yeast may be connected with respiration. This is the view now held. The carbon dioxide formed on the surface of a vat tends to shut off oxygen from the liquid underneath, and so alimentary fermentation may be succeeded by respiratory work on the part of the

ASPHYXIATED YEAST.

The same process occurs in most plants; if oxygen is withheld carbohydrate is decomposed, and respiration thereby maintained. Professor Green next spoke of the metabolic processes of the biology of yeast. In the course of growth, he said, the yeast-plant has first to make its food-supply available and then to use it.

Cane-sugar and malt-sugar as such are of no use to yeast; but these, on hydrolysis, split up into dextroses—glucose and fructose—which are at once made use of. It was found that an unorganized body that would split up cane sugar could be prepared from yeast by drying and extracting with water. This was the enzyme, invertase.

It was for a long time a mystery how maltose was acted on by yeast, for invertase would not split it up. This was at length cleared up by the discovery of another enzyme, maltase.

The several species of yeast produce respectively several different enzymes. Some of these have been isolated.

Yeast needs, in addition to sugar, proteids, and these it produces for itself; it can grow in a solution containing organic nitrogenous bodies. All extracts of yeast contain some coagulable proteid, which is precipitated on heating the extract to 45° C, and on adding chloroform or alcohol it has been found that yeast provides another enzyme to digest this proteid, which it breaks up into amides—leucin and allied bodies. This was demonstrated by

AN EXPERIMENT OF BUCHNER'S,

who found that extract of yeast, after standing three days, gave no precipitate on boiling, the coagulable matter being digested and made uncoagulable.

Yeast does not necessarily use up sugar directly it is taken in, but can store it as glycogen, and can break down this reserve carbohydrate by a diastase when required, and, therefore, under certain conditions, can produce alcohol in the absence of sugar. The question why yeast should produce alcohol has agitated many minds; it was thought that this might be the work of another enzyme, and Buchner has recently (1897) succeeded in isolating it. He produced an extract which when mixed with cane-sugar set up fermentation. Professor Green had repeated this experiment, and found that on mixing his extract with sugar-solution fermentation was set up, and at the end of a week alcohol was obtained from the liquor by distillation. Alcholic fermentation is now

shown to be due to an enzyme, and the enzyme has received the name of "Buchner's zymase." Zymase is present only in actively-fermenting yeast-cells.

Professor Green then referred to the researches of Hansen, of Copenhagen, who has found that the chief factor in producing beer of any special flavour is the use of the appropriate variety of yeast, pure cultures of each variety giving the best beers, and concluded by saying that recent work by Tollomaii has resulted in the discovery that the flavours of special wines can be produced by adding certain ferments to neutral wines.

Veterinary Registration in Victoria.

A Veterinary Dentist, holding the certificate of Sayre and Drake's Veterinary Dental College, Chicago, U.S., was recently fined £2, with £3 3s. costs, at the Melbourne District Court for exhibiting the words "Veterinary Dentist" on his brass plate. The defendant apparently laboured under the delusion that American certificates were recognised in Victoria, and had accordingly omitted to obtain the necessary registration under the Veterinary Board of Victoria.

OBITUARY.

George Wyer, M.R.C.V.S., Corby, Grantham.
Graduated, Lond., 29th April, 1868.

It was with deep regret that the parishioners learned, early on Thursday morning, December 8th, of the sudden decease of Mr. George Wyer, M.R.C.V.S., of "The Mount," Corby, at the early age of fifty-two years. The deceased gentleman, who left college a qualified veterinary surgeon in 1868, for more than thirty years had had a large and extensive practice in Corby and the surrounding neighbourhood, and was highly respected, his courtesy, attention and generosity gaining the esteem of all. In private life, he drew everyone to him, being deeply attached to his wife and family, and warm-hearted towards his acquaintances. Both in public and private life, he will be missed by a large circle of friends, whose sympathy is with the bereaved family. The interment took place at Falkingham, on Sunday, December 11th, amidst general expressions of sorrow.—*The Grantham Journal.*

CORRESPONDENCE

UNQUALIFIED ASSISTANTS AND THE R.C.V.S.

Dear Sir,

"Anti-Quack" asks some very pertinent questions in his letter of last week. A variety of reasons would probably account for the employment of the unqualified man. This assistant without a diploma goes and treats a case according to his principal's advice, he is a mechanical tool, an automaton, and so no room arises for his preferment by some clients before his principal, and no professional jealousy can germinate. He stands not on his dignity when asked to do the housemaid's work in the surgery, he considers not the order of his going when asked to groom or feed a horse or school a hunter, whilst if he only visits a case once a week with his plan of procedure sketched for him he never grumbles. Rule of thumb and a fawning sycophancy are good enough for him as well as his master, he cannot think scientifically because he has had no scientific training, caustic clams and subserviency are his chief distinguishing features, and yet he exists, and some say flourishes.

Those of us who have our diplomas ought not to be mere echoes of our principal but ought to be able to cope scientifically and independently with any ordinary case that may arise. We ought to know when we get a gentleman for a principal, and his Dr. Arnold-like characteristics ought to be appreciated by us. No scientific man can be happy and do justice to his work where the cleanliness of his surgery is deemed of more importance than the treatment of a case, when public-house company and touting in the principal's interests are deemed *sine quâ non* of employment, when ubiquitous cursing and swearing are the regular matutinal accompaniments to the principles and practice of veterinary medicine and surgery, and when Mrs. Veterinary Surgeon wears the trousers in more senses than one and tries to run both the house and the practice, and dispose of eligible Dianas at the same time. Then the unqualified man gets his chance, and so far as I am concerned he is welcome to it.

Locke, in his essay on "Human Understanding," says: "Men are guilty of three miscarriages in reference to their reason, accounted for because—

(1.) Some seldom reason at all, but do and think according to the example of others for the saving of themselves the pains and trouble of thinking and examining for themselves.

(2.) Some put passion in the place of reason and being resolved that shall govern their actions and arguments, neither use their own nor hearken to other people's reason any further than it suits their humour, interest or party.

(3.) The third sort is of those who readily and sincerely follow reason, but for want of having that which one may call large, sound, roundabout sense, have not a full view of all that relates to the question and may be of moment to decide it. We are all short-sighted, and very often see but one side of a matter; our views are not extended to all that has a connection with it. From this defect I think no man is free.

What wonder then that the unqualified man exists! Let us thank heaven we have some discerning men in our profession, and let us try not to envy those who—

"Lead a kind of—as it were,
Nor wish, nor care, nor laugh, nor cry,
And so they live, and so they die."

Yours truly,

An Assistant of Three Years' Standing.

THE PRINCE OF WALES AND TUBERCULOSIS.

Sir,

It may interest some the *Veterinary Record* readers to know that His Royal Highness The Prince of Wales is aware that some of us are doing a little in support of the efforts now being made to diminish consumption. Last week I forwarded to him a leaflet, similar to that which I have recently circulated amongst the farmers and dairymen of this district, calling attention to the advisability of having their cattle tested with tuberculin, and a letter in which I mentioned that many of them had adopted the suggestion; to which I have received a gracious reply.—Yours very truly,

Thos. A. Huband.

Cheltenham, Dec. 21.

THE STEEL MEMORIAL.

Sir,

Permit me to offer my humble felicitations on your Editorial of the 17th. It outvies my most sanguine expectations. Evidently the "little catechism" was not misplaced. You admit :

(1). That the subscribers were asked to meet without being told *where*.

(2). That very few persons attended and that the meeting was adjourned *sine die*.

(3). That you are "unable to say" how the subsequent meeting was convened.

(4). That you are therefore "unable to say" if any public notice was given.

(5). That you are unable to name more than eight persons as having assembled, of whom at least six were members of the General Committee, and therefore not, in the sense of our dispute, "subscribers" at all. Or, in other words, you can only name *two persons* unconnected with the inner affairs of the Fund who attended.

You say nothing of any discussion having taken place as to diverting the money to other than avowed uses. You say nothing of any discussion having been published. That is, you avoid any notice of the most serious charges, while admitting the minor ones.

Your defence is a series of conjectures and surmises. "Is it likely that anything unfair or irregular" could happen? "Is it possible that gentlemen . . . . . would have come together fortuitously" etc. I ask, has anything unfair or irregular ever happened in the profession before? Was the Disfranchisement of Members, the Dual Appointment, the Registration of Farriers, the attempt on the Matriculation Examination, the opposition to the Charter, the unauthorised nomination of Members for Council or any of a score of other things unfair or irregular? There will always be found men in the profession to do what is unfair or irregular provided there are those to shield and abet then. But for the moment I have little interest in what is fair or unfair, what is likely or what is possible. A thousand things are likely or possible, but only one is fact. I have asked you to state certain facts. Apparently you cannot.

So it appears after all that a meeting was called without proper notice, the place of assembly not being mentioned; that a few persons assembled and were dismissed; that you are "unable to say" how the second meeting was convened; that you can only name two persons unconnected with the Committee, who attended; that you cannot or do not judge it expedient to give any reasons why this meeting repudiated the pledges solemnly given when the money was being collected and that you are unwilling or unable to refer to any published account of a discussion which took place on that occasion. And you call the above described "a public meeting"!

These facts, based on your own statements, should, I think, convince any unbiassed person of the need of an enquiry. It is plain that on the passing of this momentous resolution absolutely disinheriting the students in whose name the money had been collected, either there was no discussion, the matter having been settled in the usual hole-and-corner fashion, or, that the persons responsible deliberately abstained from reporting that discussion. As you show, they reported at very great length what they wanted to report.

Is this a creditable proceeding? Is this the way in which "public meetings" are conducted? What is the value of "four columns" of descriptive matter from which the essence, the very kernel, is carefully omitted? And is not this omission of the highest significance?

If some eight men came together and deliberately set at nought the promises made to considerably over 200 (two hundred) subscribers surely it behoved them to give a reason—aye, and a good one, for their action. And what do we find? Not a scrap, not a tittle, not a particle of evidence that they were actuated by reason at all, still less that they realised the gravity of tne step they they were taking or of their responsibility to the subscribers.

That is, as it has always been, the great question to answer. *Why* this perversion of the Fund, *why* the secrecy about it, *why* the absence or suppression of all discussion?

To quote the names of a committee and ask "Is it likely that anything unfair would be permitted by this group of gentlemen?" is not a strong position for one who "has carefully looked up the facts," especially as *there is no evidence that these persons were present* at the meeting, though there is the best of evidence, viz., your own, that at least one was absent. Further, it does not look quite fair to place in such close juxtaposition the names of the absent, the present, and presumably absent Committees as to give the casual reader an impression that a good round score attended. You have *proved* the presence of eight, and eight only.

Nor does it help the case to quote the reference in the Agenda to "post graduate students" but only more strongly indicates the knowledge of those responsible that the Fund was for *students alone* and that even to extend its scope to post-graduate students was a very serious step.

Enquiries are not to be baffled by such transparent devices as these, and if the management of the Fund is to be exonerated from blame—I avoid using a harsher term—the sooner the very fullest information and especially the reasons for action, are published, the better.—Yours faithfully,

J. A. W. Dollar.

56 New Bond St., W., Dec. 17.

[Our correspondent has conjured up a dreadful spectre from his own unaided imagination, and we have afforded him an opportunity of displaying some histrionic ability in demolishing it. He cannot yet see that no wrong has been done and that every step was carefully and honestly made. He imagines the Steel Fund was collected for the special benefit of students. It was not. It was formed to commemorate John Henry Steel, and this was always the foremost object of all concerned. The method of doing so was a secondary matter which was settled at a public meeting six years ago without a word of protest, until something convinced Mr. Dollar that he had discovered a dark and shady transaction. It is right to be jealous for the profession—for its prophets and its altars. Truth and honour are, however, not the monopoly of one man—see I. Kings, c. 19, v. 14 and 18. —Ed.].

Communications, Books, and Papers received:—Messrs. J. A. W. Dollar, W. Roger Clarke, A. W. Hill, T. B. Bindloss, T. A. Huband. "An Assistant."

American Veterinary Review, *The Kettering Guardian*.

Original articles and reports should be written on one side only of the paper and authenticated by the names and addresses of the writers not necessarily for publication.

We shall be obliged by early intelligence of all matters worth bringing under the notice of the profession, and thankful to any friends who may send us cuttings from local papers containing facts of interest.

A newspaper packet, or the wrapper thereof, may bear the *name and address of the sender* and a *reference to any page of, or place in*, the newspaper to which the attention of the addressee is directed.—(*Extract from Postal Guide.*)

Communications for the Editor to be addressed 20 Fulham Road, S.W.